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ABSTRACT

This paper describes the development of a survey instrument to measure motivational aspects of reading and the use of reading strategies. The 28-item reading survey measured three factors: value, self-concept, and reading strategies. Factor analyses were run to confirm the existence of the three factors. The reading survey was administered to all developmental reading and English students and to students enrolled in freshman-level English classes at the beginning of the fall 1999 semester at William Rainey Harper College (Illinois). Results indicated that students with developmental-level course placements had lower mean scores on all three scales than students placed in college-level courses. Additionally, there was a slight, but significant, positive correlation between reading survey scale scores and the COMPASS reading and writing subtest scores. Another interesting finding was the difference among value scale scores for first-time students and continuing-college students. First-time students tended to value reading less than more experienced college students. There were gender and ethnic mean differences on the reading scales. There were also ethnic differences, but they were not straightforward. There was evidence that students who obtained higher grades valued reading more as measured by the scale. By the end of the fall semester, students in reading courses had attained scores no different from scores of students in English courses who had not been required to take a reading course. The 36 survey questions, from which the final 28 questions were selected through the factor analysis, are presented. (Contains 19 references.) (VWC)

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Motivational Aspects of Reading and its Measurement in Community College Students[1]

by

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Abstract

Our college is an open-door institution in which many of its full-time students test into developmental reading. Reading faculty is confronted with students' lack of motivation to read. After revising the reading curriculum, students' end of semester reading comprehension was greatly improved when measured by a standardized reading comprehension test. Faculty noticed that students seemed more motivated to read and searched for an instrument to measure motivational aspects of reading. Finding little for measuring adult motivation, faculty developed and tested a survey designed to measure *valuing*, *self-concept*, and *reading strategies* – understudied aspects of adult reading. Over 1,700 students in developmental reading, developmental English, and college level English courses completed the survey. Exploratory and confirmatory factor analyses were conducted to develop scales for measuring *valuing*, *self-concept*, and *reading strategies*. Results indicate that the scales are a beginning for measuring the motivational aspects of reading and are useful for improving both whole class and individualized reading instruction.

Introduction

We are often questioned about why students test into our developmental reading program and about how our program meets the needs of these students. Our college is an open-door institution in which 52% of the entering full-time freshman class test into some type of developmental coursework and 35-40% test into developmental reading. These data are distressing to administrators from local high school districts who are rightfully concerned about accountability issues. Are they preparing their students to participate fully in a society and workplace that increasingly demands powerful literacy abilities? Why aren't their students prepared for college coursework when they arrive at college? The reality of testing into developmental courses is equally distressing for the first-time college students for whom placement in developmental reading at the community college may be the first indication that they are underprepared for college coursework.

The reading faculty are confronted daily with students' lack of motivation to read. Research shows that student motivation to read begins to diminish as early as fourth grade when the emphasis on learning to read changes to an emphasis on reading to learn. Students have trouble coping with the demands of content area reading and begin to avoid reading. As each year passes, their cumulative reading deficits grow larger. By the time these students reach secondary school, the chance that they will be identified for intensive reading interventions is slight. Additionally, many of the courses these students take in middle school and high school place few reading/writing demands on their students. According to Richard Vacca, "in many urban, suburban, and rural schools in the U.S. large numbers of adolescents rarely engage in reading and writing that promotes growth." (Vacca, 1998).

He also states that the potential to marginalize the development of older literacy learners has never been more evident than it is today.

A large number of students from our college feeder districts arrive at college with reading deficits. Not only are they unable to identify main ideas and recognize relationships among meaningful ideas, they seem not even to recognize when their reading comprehension breaks down. Anecdotal evidence over the years highlights a pattern of students becoming disengaged from reading, avoiding both personal and school related reading for the previous eight to ten years of their schooling.

In an attempt to understand more about our students, we embarked on several projects whose results have converged to inform us about the nature of our students and the issue of student motivation to read. In a background survey administered to 352 reading students in the fall of 1998, some common patterns emerged. We discovered that:

- 56% said they enjoyed reading less in middle school than in grade school.
- only 10% indicated they often read outside of school.
- only 47% completed most of their school reading assignments.
- 61% said they read six or fewer books in their entire high school careers.
- only 24% felt like successful readers in high school.
- 32% read three or fewer books in their entire high school careers.
- 60% said they've never read a book that made a difference in their lives.
- rarely were students identified as needing help with reading once they left elementary school.

In addition, 68% of the students indicated that they would not include "reader" in their self-definition. When asked why, students responded with comments that seemed to fall into two

categories that are major components of motivation: valuing the reading process and feeling competent as a reader. Following are examples of responses that indicate that students have problems valuing reading:

- I don't like to be forced to read books that I will not enjoy.
- Reading for pleasure is not fun and is pointless.
- It's not something I enjoy doing and I got through 12 years of school not doing too much of it.
- I never read any books that made me love reading.
- Why read when you can watch it on the TV?
- I rarely read the class assigned books and never read outside of class and I was always able to pass my classes with an 'A' or 'B' grade.

That students also believe they lack competence in reading is evident in the following responses:

- I don't understand it, and it makes me angry.
- I'm afraid I won't comprehend it.
- I don't like to read. I suck at it.
- I don't read much because I read slow.

Interviews with students also suggest that students lack helpful reading strategies. When students were asked to describe troubleshooting strategies, a typical response was, "I would just skip a couple parts of the book to a chapter that I find interesting.... If I run out of time I'd try to read every other line...or...speed read and follow my finger...try to read faster... ." Many students seemed to lack a repertoire of strategies for constructing meaning from their reading. (Gustafson & Poziemski, 1999).

At the completion of our background survey, we felt that we had a better sense of who our students were. We could understand why the National Assessment of Educational Progress (NAEP) in Reading indicated that the majority of children and adolescents in the United States are reading only at a basic level. (Campbell, Donahue, Reese & Phillips, 1996). We were very concerned because participation in our society requires higher and higher levels of literacy. "Approximately 80% of the population above the age of 12 now needs higher order literacy competency for full participation in society." (Guthrie, 1996). This is particularly significant for our students who are trying to enter an academic cultural niche that they are not prepared to enter. The community college reading program is perhaps the last best hope for students who have encountered failure for their entire school careers.

Recognition of this problem prompted us to introduce a more meaningful and engaging curriculum. We noticed that a by-product of the new curriculum seemed to be an increased motivation to read. We wondered if this change were measurable and if it could be connected to achievement.

A search of pertinent literature indicated that motivation is indeed connected with achievement. Our search revealed several important factors influencing motivation that we also found emerging among our students' comments from the background survey. The first factor, self-perceived competence in reading, suggests that when students believe that they can succeed, they are much more likely to continue with the task than when they anticipate failure. For students who have learned from grade school on that they are not successful readers, belief of failure becomes a cycle which inhibits their reading. The second factor, task value, reveals that students will be motivated when they feel that a task is worth doing.

In fact, "students who perceive reading as valuable and important and who have personally relevant reasons for reading will engage in reading in a more planned and effortful manner." (Gambrell, Palmer, Codling, & Mazzoni, 1996).

A third factor that seems to be related to motivation is students' use of strategic reading behaviors. In a study conducted at Texas Tech University, El-Hindi and Childers (1997) examined factors that influence the learning of at-risk students. They discovered that as students became more aware of how to apply reading strategies, they attribute success to causes within their control.

According to Weaver (1998), consistent use of reading strategies leads to more confidence, more risk-taking, and more reading, which produces more effective reading. Since proficient readers incorporate strategies such as: questioning, rereading, goal setting, and creating intertextual connections into their reading practice, we felt that knowing how and when to use these strategies would enhance feelings of control among our students, increase their reading self-concept, and enhance motivation.

We began to develop an instrument to ascertain motivation among community college students by building on the work of Gambrell, et.al. (1996), who created the *Motivation to Read Profile* (MRP) to assess reading self-concept and value of reading in children in grades 2-6. The MRP consists of a group-administered quantitative reading survey including 20 items and a qualitative conversational interview. Each item in the reading survey allows for four possible responses, generating lickert type scales, and measuring both self-perceived competence (self-concept) and valuing of the task (value). The two factors were confirmed through unweighted least squares factor analysis with varimax rotation. Moderately high Cronbach α reliabilities of .75 for self-concept and .82 for value scales were reported.

Our first adaptation of the MRP was a group-administered quantitative reading survey administered to a homogeneous population of developmental community college reading students. This adaptation confirmed that valuing and self-concept continue to be factors in adult motivation to read. In addition, reading strategies emerged as another motivational factor for this older population (Crane, Poziemski, & Gustafson, 1998).

This paper focuses on extending the authors' previous research measuring motivation aspects of reading and use of reading strategies. One of the major limitations of our previous work was that students responding to the instrument were all from developmental reading classes. To address this problem, a revised reading survey was administered to all developmental reading and English students and to students enrolled in freshman level English classes at the beginning of the Fall 1999 semester. After examining the factor structure of the items, the resulting factor scales were examined in relationship to type of course in which the student was enrolled and to students' reading and writing scores on the COMPASS placement test. Additional analyses examined whether there were gender, ethnic, or age differences in student responses and whether there were differences among first-time and continuing students. Finally, students in reading courses completed a second survey at the end of the semester for comparison with beginning of semester survey results.

Method

Survey instrument development

Items from the previously developed motivation survey (Crane, Poziemski, & Gustafson, 1998) were examined and retained (or dropped) based on whether or not the item contributed to the factors of interest. Some items were rewritten for clarity and new items were added. The result was a 36-item survey with 12 items for each of the three scales: *self-concept*,

value, and *reading strategies*. The order of item placement on the survey instrument was random. Figure 1 lists the 36 items and indicates the intended scale for the item. MRP items retained from the previous survey are indicated with an asterisk.

Item[a]	Question[b]
S1*	Reading is easy for me.
R2	I form opinions about what I am reading.
R3	I question what I don't understand while reading.
R4	I think beyond the factual level about material I have read. (I read between the lines.)
V5*	I am happy when someone gives me a book for a present.
R6	I react to what I read based on my personal life experience.
V7*	My best friends enjoy reading.
R8	I can identify my strengths in reading.
S9*	I read as well as my friends read.
S10	When I read, I can state the important ideas.
V11*	Knowing how to read well is important.
R12	When I am having difficulty, I reread in order to try to understand.
S13*	When asked a question about what I've read, I can think of an answer.
V14*	I think libraries are interesting places to spend time.
S15	I understand what I read.
S16	I am able to use information or quotes from my reading to support my point of view.
V17*	I tell my friends about good books I have read.
R18	When I run into trouble reading, I keep reading in an attempt to understand.
R19	When I am reading school material, I highlight or take notes.
V20*	People who read a lot are very interesting.
S21*	My friends think I am a good reader.
V22	To be successful in college, I need to read outside of class almost every day.
R23	I can identify my weaknesses in reading.
V24*	I read often.
R25	I connect ideas from my current reading to things I've read in the past.
S26*	When I read out loud, I am a good reader.
R27	I set goals for reading.
S28*	When I come to a word I don't know, I can figure it out.
S29*	When I am reading alone, I understand what I read.
V30*	I enjoy reading books.
V31	Books that I read are of value to me on a personal level.
V32	I am willing to try to improve my reading.
V33*	I think reading is an interesting way to spend time.
R34	I use ideas from my reading to increase my understanding of the world.
S35*	I worry about what others think about my reading.
S36*	I am a good reader.

[a]Items marked with an * were adapted from the MRP Survey.
[b]Possible responses were: "Strongly disagree", "Disagree", Slightly disagree", 'Slightly agree", "Agree", and "Strongly agree".

FIGURE 1

Items Included on the Reading Survey

The survey was printed on scannable forms and distributed to reading and English instructors for students to complete during the first two weeks of class. Students were asked to respond to each item using a six-point lickert scale ranging from "strongly disagree" to "strongly agree."

Data collection

Surveys were administered to 2,932 students enrolled in reading and English classes. Only surveys with responses to all 36 items were retained for analysis. A total of 2,299 surveys were retained for further analysis. Students enrolled in more than one of the participating classes could have completed two surveys. Students were asked to provide social security numbers to exclude their surveys from the analyses. Unfortunately, some students did not report social security numbers. Survey data were excluded from scale development analyses and any statistical comparisons if the student's social security number was missing or if the student completed more than one survey. However, scale means, using data from all completed surveys are reported where appropriate.

Once a data file of scanned survey results was obtained, demographic data (gender, ethnicity, age, and first semester registered) and COMPASS placement scores in reading and writing were added to the data file. Table 1 reports the number and percent of surveys used in demographic and instrument analyses by course. Also reported is the total number of completed surveys by class (for which descriptive statistics are given in the results section).

Students in reading courses completed a second reading survey at the end of the semester. Also, English and reading course grades were obtained for all students that completed surveys at the beginning of the semester.

TABLE 1

Number of pre-surveys from students in English and reading courses Fall 1999

Total Number of Complete (36 responses) Surveys			Number Used in Statistical Analyses		
Course	Number	Percent	Course	Number	Percent
ENG 098	142	6.2%	ENG 098	66	3.7%
ENG 100	283	12.3%	ENG 100	173	9.8%
ENG 101	906	39.4%	ENG 101	826	46.6%
ENG 102	542	23.6%	ENG 102	490	27.7%
RDG 090	170	7.4%	RDG 090	88	5.0%
RDG 099	256	11.1%	RDG 099	128	7.2%
TOTAL	2,299		TOTAL	1,771	

Data analyses

Analyses fall into two categories, (1) analysis of the items and related scales and (2) course and demographic analyses using the final reading scales. The latter analyses, particularly the course related analyses, provide some insight into the validity of the instrument.

Scale and item analyses. Prior to performing scale and item analyses, the 1,771 available surveys were randomly split into two samples, Sample 1 and Sample 2. Sample 1 was used for exploratory and confirmatory factor analyses leading to "final" item selection and scale calibration. Sample 2 surveys were used as a check on the factor scales determined from Sample 1 data. Once items were calibrated for each scale, reliabilities were determined for Sample 1 and Sample 2.

Exploratory factor analyses (using the 36 survey items) were performed on Sample 1 data. SPSS unweighted least squares factor analysis (ULS) was used for initial explorations. First factor loadings on the unrotated factor matrix were used to select items for retention. Items with the least loadings were deleted and the factor analysis repeated using the reduced item set until retained items resulted in three factors. Varimax rotation of the initial solution was performed on the last factor analysis to minimize the number of variables with high loadings on a factor

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thereby creating more interpretable factors (Norušis,1994). The intent was to determine if each of the three factors contained items with loadings of at least .5 on one factor and minimal loadings (less than .3) on the remaining factors. Also, we wanted to determine if items classified as belonging to a particular scale (*value, self-concept,* or *reading strategies)* did indeed belong on that scale. If the factor pattern could be substantiated, simple summing of item scores within a scale would provide a factor-based scale (Kim and Mueller, 1978) for assessing the motivation factors and the strategic reading behavior factor. If items exhibited significant loadings on more than one factor, actual estimated factor scores could be used to produce factor scale scores. Using the final results of the SPSS factor analyses, further exploratory and confirmatory analyses were performed using LISREL 7.20 software (Jöreskog and Sörbom, 1991) with the Sample 1 data. Using specifications from the final Sample 1 LISREL analysis, comfirmatory analyses were run using the Sample 2 data.

The general measurement model for confirmatory factor analyses, described by Jöreskog and Sörbom (1996, p123) is

$\mathbf{x} = \Lambda_x \xi + \delta$	where $\mathbf{x}$, Λ_x, ξ, and δ are defined as:
$\mathbf{x}' = (x_1, x_2, x_3, \cdots, x_q)$	the q observed or measured variables;
Λ_x	the matrix of the general model;
$\xi' = (\xi_1, \xi_2, \xi_3, \cdots, \xi_n)$	the n unobservable or latent variables; and
$\delta' = (\delta_1, \delta_2, \delta_3, \cdots, \delta_q)$	the error variables associated with the q observed variables.

Figure 2 provides a visual picture of the general measurement model.

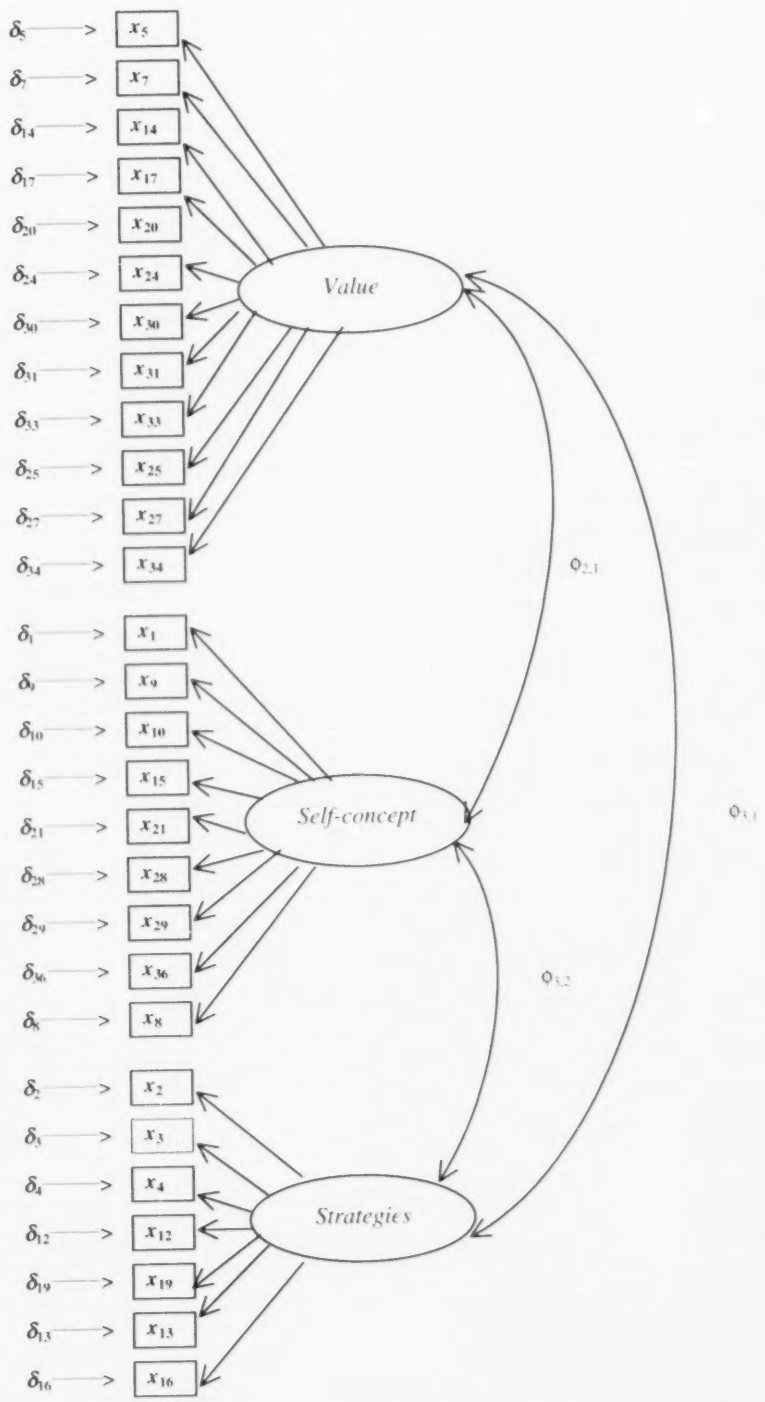

FIGURE 2
Three Factor General Model

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According to the authors,

> The model assumes that 1) the ξ's and δ's are random variables with zero means, 2) the δ's are uncorrelated with the ξ's, and 3) all observed variables are measured in deviations from their means.
>
> The measurement model represents the regression of **x** on ξ and the element $\lambda_{i,j}$ of Λ_x is the partial regression coefficient of ξ_j in the regression of x_i on $\xi_1, \xi_2, \cdots, \xi_n$.
>
> The assumed model implies that the covariance matrix of **x** is $\Sigma = \Lambda_x \Phi \Lambda_x' + \Theta$, where Φ and Θ are the covariance matrices of ξ and δ, respectively.
>
> **Standardization:** In the standardized solution for this submodel, the ξ-variables have unit variance and Φ is a correlation matrix. If the latent variables are assumed uncorrelated in order to make the model identifiable, Φ becomes the identity matrix, **I**. (Jöreskog and Sörbom, 1996, pages 123-124)

If scale items loaded significantly on more than one factor, estimated (deviation) factor scores for an individual, *p*, could be computed from the estimated regression of $\hat{\xi}_p$ on the observed item (deviation) scores for individual *p* as $\hat{\xi}_p = \left(\hat{\xi} \hat{\Lambda}' \hat{\Sigma}^{-1} \right) \left(x_p - \overline{x_c} \right)$, where x_p are the observed item scores for individual p and $\overline{x}_c$ are the calibration sample item means (Jöreskog and Sörbom, 1996, pages 134-135). Estimated factor scores are standardized due to factoring of a correlation matrix. Actual results of the exploratory and confirmatory factor analyses are given in the results section.

Standard item analyses using the SPSS Reliabilities program were completed for the final item set. Cronbach α reliabilities were determined for each scale (*value, self-concept,* and *reading strategies*). Total scale reliabilities were also determined. Reliabilities are reported in the results section.

Course level, placement, demographic, and end of semester analyses. Course analyses were undertaken to address the three underlying assumptions of this study: (1) poor readers were generally lacking in reading self-concept, (2) valued reading less, and (3) were less likely to use reading strategies when compared with "better" readers.

Students taking ENG 101 are required to take a placement test to determine if they must first take a reading course and/or a lower level English course. Depending on the student's COMPASS placement scores in reading and writing, the student may take a reading course concurrently with an English course. Thus, one would expect students in ENG 101 (a writing course) or in ENG 102 (a literature course) to have higher scale scores on the Reading Motivation Survey than students taking lower level English or reading courses.

A multivariate analysis of variance (MANOVA) analysis was used to test the hypothesis of no significant differences on the scale scores among students in lower level English or reading courses and students in the higher level courses. Because of concerns that continuing students may have different scores on the reading scales than first-time students, the hypothesis of no significant differences among continuing and first-time students was also tested in this analysis.

Since students' COMPASS placement test scores in writing and reading were used for placement in reading courses and English courses, there should be a positive relationship among placement test scores and reading survey scale scores if, as we believe, motivation does influence reading levels. In other words, better readers ought to have a higher reading self-concept, value reading more, and be more likely to use reading strategies than less able readers. Correlations among placement scores (in reading and writing) and reading survey scale scores were examined to test this hypothesis. Findings from the course level and placement analyses are reported under the heading "Course level and placement analyses" in the Results section.

Demographic analyses were undertaken to determine whether or not there were gender, ethnic, or age differences among students' scale scores. MANOVA analyses of the pre-survey scores were used to test for differential results among the gender and ethnic variables. A correlation analysis was done to determine if there was a relationship between age and students' scale scores. Findings from the demographic analyses are reported under the heading "Demographic analyses" in the Results section.

It was anticipated that students in the reading courses should have lower scores on the pre-survey than students not required to take a reading course. After a semester of reading instruction, one of the desired outcomes would be that students would score the same (or higher) than students not required to take a reading course (or that had already taken a reading course). This was examined by comparing post-survey mean scale scores of reading students with pre-survey scale scores of English course students not also taking a reading course. MANOVA analyses were used to test hypotheses of no significant difference among English course only students and English and reading courses students. Additionally, for students taking reading courses, the hypothesis of no significant differences among pre-survey and post-survey scale means was tested using paired *t*-tests.

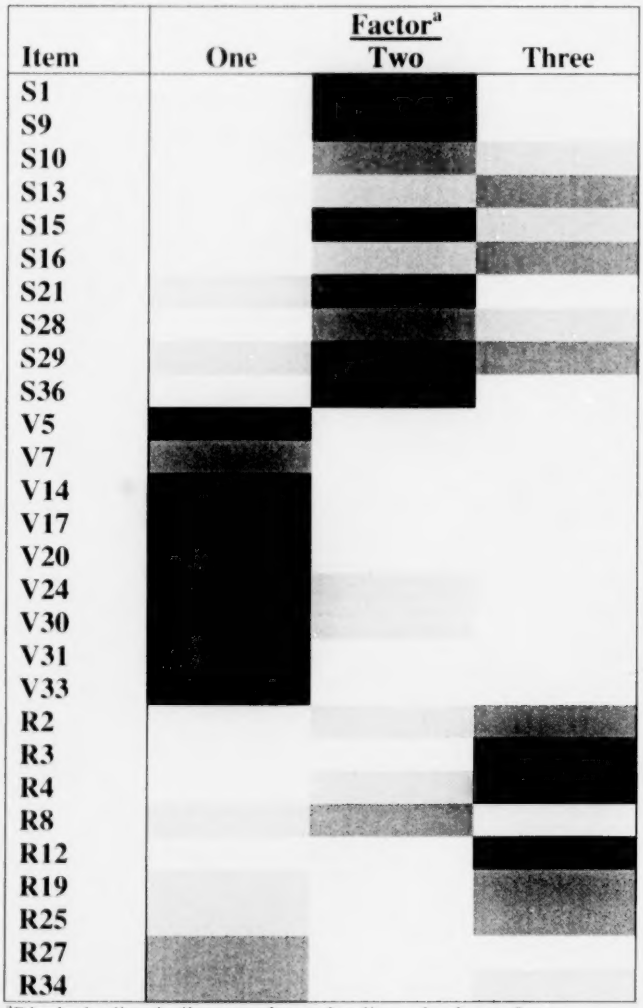
There was some interest as to whether or not there was any relationship among students' scores on the reading survey from the beginning of the semester and their course grades at end of semester. Regression analyses of pre-survey scale scores and pre-survey total score on end of semester course grade were done to address this issue. Findings from these analyses are found under the heading "End of semester analyses" in the Results section.

Results

Scale and item analyses

Exploratory and confirmatory factor analyses. Exploratory factor analyses of the Sample 1 data were performed using the SPSS unweighted least squares (ULS) software. The first analysis examined factor loadings on the first (unrotated) factor. Items loading at least .5 in absolute value were retained. Additional items with loadings of at least .4 were added provided the added items did not result in more than three factors. The first factor analysis resulted in six factors. However, none of the items deleted had factor loadings above .3 on any of the factors other than the first factor. The process eliminated eight items from further analysis.

The remaining 28 items were factored again using unweighted least squares and rotated using a varimax rotation. Three factors were obtained from this analysis. The resulting factor pattern matrix is given in Figure 3. The factor loadings, all of which were significant, are also provided in Figure 3. It is apparent from Figure 3 that all the *value* items grouped together on Factor One. Additionally, three of the originally categorized *reading strategies* items (R25, R27, and R34) appeared to make a stronger contribution to Factor One. All but two (S13 and S16) of the originally categorized *self-concept* items grouped together on Factor Two. S13 and S16 had higher loadings on Factor Three. R8, originally categorized as a *reading strategies* item, had its highest loading on Factor Two. Only five of the items originally categorized as *reading strategies* had their highest loadings on one factor (Factor Three).



[a]Black shading indicates a factor loading of at least .5. Gray shading indicates a significant loading of less than .5. The darker shade of gray indicates that the loading was higher on the factor than the item's loading on another factor.

FIGURE 3

Factor Pattern Using 28 Items

Confirmatory factor analyses were done using LISREL 7.2 software (Jöreskog and Sörbom, 1991). Sample 1 data (n = 885) was analyzed using the factor pattern shown in Figure 3. This was accomplished by specifying the matrix Λ_x have zero loading wherever the entry on Figure 3 was not shaded and requiring LISREL to estimate factor the loading for each shaded area on Figure 3. Using the correlation matrix of the 28 item responses, ULS was the method used for estimation and a standardized solution was requested. The final LISREL analysis for Sample 1 included item R27 as having factor loading on Factor 3.

Sample 2 data (n = 886) was analyzed using the final LISREL pattern specifications obtained from Sample 1 data. Figure 4 compares the results of LISREL analyses for both Sample 1 and Sample 2 data. Significant factor loadings are reported also. Based on the goodness of fit indices and comparing the two factor patterns shown in Figure 4, the Sample 2 pattern was fairly consistent with the Sample 1 pattern. Only one item (S29) had a significant loading using Sample 1 data that was not significant using Sample 2 data. As expected, the three factors were correlated. Table 2 gives the estimated factor correlations provided by the LISREL program. Also provided in Table 2 are Cronbach coefficient α reliabilities estimated from Sample 1 and Sample 2 data.

Table 2

Factor correlations and scale reliability estimates

	Value		***Self-concept***		***Reading Strategies***		**Cronbach's α**	
	S1	**S2**	**S1**	**S2**	**S1**	**S2**	**S1**	**S2**
Value	1.00	1.00					.85	.82
Self-concept	.510	.521	1.00	1.00			.76	.75
Reading strategies	.661	.599	.578	.504	1.00	1.00	.80	.80
						Total survey	.91	.90

Reliabilities are quite acceptable for an attitudinal survey and are consistent with what Gambrell, *et. al.*, reported for *value* and *self-concept* scales.

Item	Factor[a] One		Factor Two[a]		Factor Three[a]	
	Sample 1	Sample 2	Sample 1	Sample 2	Sample 1	Sample 2
S1			.806	.810		
S9			.617	.671		
S10			.411	.344	.300	.383
S13			.277	.272	.410	.499
S15			.558	.526	.288	.341
S16			.311	.201	.417	.511
S21	.280	.361	.538	.434		
S28			.344	.343	.328	.349
S29	.145	ns	.420	.354	.243	.417
S36			.866	.878		
V5	.809	.774				
V7	.485	.471				
V14	.685	.631				
V17	.741	.698				
V20	.580	.546				
V24	.645	.592	.224	.236		
V30	.745	.683	.154	.178		
V31	.738	.712				
V33	.801	.749				
R2			.181	.197	.487	.512
R3					.629	.583
R4			.156	.196	.552	.555
R8	.261	.326	.472	.392		
R12					.508	.501
R19	.244	.231			.280	.229
R25	.344	.409			.415	.352
R27	.319	.448			.229	.124
R34	.493	.484			.248	.235

	Sample 1	Sample 2
Goodness of Fit	.994	.992
Adj. Goodness of Fit	.993	.990
Root Mean Square Residual	.032	.035

[a]Black shading indicates a factor loading of at least .5. Light gray shading indicates a significant factor loading between .1 and .3. Gray shading indicates a factor loading of at least .3 but less than .5.

FIGURE 4

Comparison of Sample 1 and Sample 2 Factor Patterns

Given the close agreement between the Sample 1 and Sample 2 results, further analyses using factor scale scores were conducted. The Sample 1 results were used for scale calibration.

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Estimates for students' factor scores were obtained using the procedure outlined in the previous section. To allow for readability and for easier comparisons among factor scores, the factor scores were rescaled to have means of 50 (instead of 0) and standard deviations of 10 (instead or one). Since the rescaling was a linear transformation of the estimated factor scores, results of subsequent analyses are the same as if the original scales had been employed.

Course Level, Placement, Demographic, and End of Semester Analyses

Analyses reporting results of statistical tests are based on the same data used for scale development as discussed in reference to Table 1. However, where appropriate, summary statistics are also reported on all students for whom data were available.

Course level and placement analyses. Two levels of reading courses and three levels of English courses completed the survey at the start of the Fall 1999 semester. There were two developmental reading courses, RDG 090 and RDG 099, two developmental English courses, ENG 098 and ENG 100, and two college level English courses, ENG 101 and ENG 102. Within each course level, students were separated into two groups based on whether they were first-time Harper students or continuing students. A MANOVA analysis was done to test for significant course level effects and for significant first-time status effects on the reading scale means. Table 3 reports the results of the MANOVA analysis.

A multivariate test for homogeneity of dispersion matrices indicated that the within cell covariance matrices were significantly different hence results should be interpreted with caution. However, separate univariate analyses for each scale score indicated the source of the differences among dispersion matrices was likely due to the *reading strategies* scale; within cell variances were not significantly different for either the *value* or *self-concept* scales.

TABLE 3

MANOVA Results for Course Level and New Student Factors

EFFECT: LEVEL BY FIRST

Multivariate Tests of Significance (S = 3, M = 0, N = 878 1/2)

Test Name	Value	Approximate F	DF	Error DF	Sig. of F
Pillais	.00165	.24246	12.00	5283.00	.996
Hotellings	.00165	.24207	12.00	5273.00	.996
Wilks	.99835	.24225	12.00	4654.17	.996
Roys	.00107				

Univariate F-tests with (4,1761) D. F.

Variable	Hypothesis SS	Error SS	Hypothesis MS	Error MS	F	Sig. of F
CONCEPT	63.82466	185073.632	15.95617	105.09576	.15183	.962
VALUE	86.81249	269875.074	21.70312	153.25104	.14162	.967
STRATEGY	27.59921	146018.791	6.89980	82.91811	.08321	.988

EFFECT: FIRST

Multivariate Tests of Significance (S = 1, M = 1/2, N = 878 1/2)

Test Name	Value	Approximate F Hypothesis	DF	Error DF	Sig. of F
Pillais	.00637	3.75863	3.00	1759.00	.010
Hotellings	.00641	3.75863	3.00	1759.00	.010
Wilks	.99363	3.75863	3.00	1759.00	.010
Roys	.00637				

Univariate F-tests with (1,1761) D. F.

Variable	Hypothesis SS	Error SS	Hypothesis MS	Error MS	F	Sig. of F
CONCEPT	46.81550	185073.632	46.81550	105.09576	.44546	.505
VALUE	767.57203	269875.074	767.57203	153.25104	5.00859	.025
STRATEGY	149.77513	146018.791	149.77513	82.91811	1.80630	.179

EFFECT: LEVEL

Multivariate Tests of Significance (S = 3, M = 0, N = 878 1/2)

Test Name	Value	Approximate F	DF	Error DF	Sig. of F
Pillais	.03536	5.25057	12.00	5283.00	.000
Hotellings	.03614	5.29309	12.00	5273.00	.000
Wilks	.96489	5.27536	12.00	4654.17	.000
Roys	.02604				

Univariate F-tests with (4,1761) D. F.

Variable	Hypothesis SS	Error SS	Hypothesis MS	Error MS	F	Sig. of F
CONCEPT	2589.15777	185073.632	647.28944	105.09576	6.159	.000
VALUE	5638.71964	269875.074	1409.67991	153.25104	9.199	.000
STRATEGY	3697.21050	146018.791	924.30263	82.91811	11.147	.000

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Results of the analysis indicated there was no interaction of course level and first-time status effects. Multivariate tests indicated the course level main effect was significant ($p < .01$) and the first-time status main effect was significant also ($p < .05$). Examination of the univariate F-tests revealed significant course level differences on all three reading scales ($p < .01$). Students in college level courses scored consistently higher than students in lower level courses on all three scales. Students in the higher level reading course scored higher than students in the lower level reading course on all three scales also. Additionally, students in the lowest level reading course and the lowest level English course consistently exhibited more variability within scale scores than students enrolled in higher level courses. The first-time student effect was significant for the *value* scale ($p < .05$). Continuing students consistently scored higher on the *value* scale regardless of the course level.

Table 4 reports means and standard deviations for each of the scales; the total survey mean and standard deviation are also reported. Means for first-time students and continuing students are reported within each course level. College level course students scored consistently higher than students in developmental courses on all three reading scales. First-time students scored consistently lower than continuing students on the *reading strategies and value* scales regardless of course level. However, first-time students scored consistently higher on the *self-concept* scale. Table 5 provides course level means and standard deviations for all students completing the survey (n = 2299). Table 5 includes students who completed two surveys (one for each course in which the student was enrolled) and students who did not provide social security numbers and not included in Table 4.

TABLE 4

Reading Survey Scale Means and Standard Deviations (N = 1,771)

READING SCALE	Course Level	Count	Mean	Standard Deviation	Standard Error of Mean
		FIRST-TIME STUDENTS			
Self-concept	**RDG 090**	55	46.24	11.24	1.52
	RDG 099	87	49.14	10.22	1.10
	ENG 098	45	48.13	10.70	1.59
	ENG 100	90	49.36	10.32	1.09
	COLLEGE	514	50.77	9.39	.41
Value	**RDG 090**	55	45.72	13.36	1.80
	RDG 099	87	46.90	12.76	1.37
	ENG 098	45	47.27	13.05	1.94
	ENG 100	90	45.73	12.62	1.33
	COLLEGE	514	50.26	11.93	.53
Reading Strategies	**RDG 090**	55	45.84	10.61	1.43
	RDG 099	87	47.75	9.42	1.01
	ENG 098	45	46.94	9.78	1.46
	ENG 100	90	47.10	9.57	1.01
	COLLEGE	514	50.56	8.26	.36
Total for Survey	**RDG 090**	55	137.79	31.32	4.22
	RDG 099	87	143.80	28.48	3.05
	ENG 098	45	142.34	28.20	4.20
	ENG 100	90	142.19	29.20	3.08
	COLLEGE	514	151.59	25.99	1.15
		CONTINUING STUDENTS			
Self-concept	**RDG 090**	33	45.36	10.62	1.85
	RDG 099	41	47.55	13.51	2.11
	ENG 098	21	47.78	10.84	2.36
	ENG 100	83	49.51	11.31	1.24
	COLLEGE	802	50.54	10.35	.37
Value	**RDG 090**	33	48.66	10.78	1.88
	RDG 099	41	48.90	14.16	2.21
	ENG 098	21	50.83	13.01	2.84
	ENG 100	83	46.85	11.48	1.26
	COLLEGE	802	52.40	12.52	.44
Reading Strategies	**RDG 090**	33	46.99	10.70	1.86
	RDG 099	41	48.39	10.38	1.62
	ENG 098	21	48.79	9.87	2.15
	ENG 100	83	48.04	9.91	1.09
	COLLEGE	802	51.18	9.14	.32
Total for Survey	**RDG 090**	33	141.01	28.20	4.91
	RDG 099	41	144.84	33.70	5.26
	ENG 098	21	147.40	29.39	6.41
	ENG 100	83	144.40	28.21	3.10
	COLLEGE	802	154.12	28.11	.99

TABLE 4 continued

READING SCALE	FIRST-TIME AND CONTINUING STUDENTS COMBINED Course Level	Count	Mean	Standard Deviation	Standard Error of Mean
Self-concept	**RDG 090**	88	45.91	10.96	1.17
	RDG 099	128	48.63	11.35	1.00
	ENG 098	66	48.02	10.66	1.31
	ENG 100	173	49.43	10.77	.82
	COLLEGE	1316	50.63	9.98	.28
Value	**RDG 090**	88	46.82	12.48	1.33
	RDG 099	128	47.54	13.20	1.17
	ENG 098	66	48.40	13.04	1.61
	ENG 100	173	46.27	12.07	.92
	COLLEGE	1316	51.57	12.33	.34
Reading Strategies	**RDG 090**	88	46.27	10.60	1.13
	RDG 099	128	47.96	9.70	.86
	ENG 098	66	47.53	9.77	1.20
	ENG 100	173	47.55	9.72	.74
	COLLEGE	1316	50.93	8.81	.24
Total for Survey	**RDG 090**	88	139.00	30.06	3.20
	RDG 099	128	144.13	30.12	2.66
	ENG 098	66	143.95	28.46	3.50
	ENG 100	173	143.25	28.67	2.18
	COLLEGE	1316	153.13	27.32	.75

The pattern in Table 5 is the same as found in Table 4; students enrolled in college level courses had consistently higher scale means than students enrolled in developmental courses. Students in the higher level reading course had consistently higher scale means than students in the lower level reading course also. Since first-time status could not be determined for students that did not provide a social security number, means for first-time students could not be compared with means for continuing students.

TABLE 5

Reading Survey Scale Means and Standard Deviations for all Students(N = 2,299)

READING SCALE	Course Level	Count	Mean	Standard Deviation	Standard Error of Mean
Self-concept	**RDG 090**	170	45.53	10.95	.84
	RDG 099	256	47.84	10.54	.66
	ENG 098	142	47.37	10.28	.86
	ENG 100	283	48.06	10.53	.63
	COLLEGE	1448	50.29	10.06	.26
Value	**RDG 090**	170	46.12	12.24	.94
	RDG 099	256	47.37	12.69	.79
	ENG 098	142	46.08	12.97	1.09
	ENG 100	283	45.95	12.24	.73
	COLLEGE	1448	51.11	12.35	.32
Reading Strategies	**RDG 090**	170	45.53	10.51	.81
	RDG 099	256	47.43	9.65	.60
	ENG 098	142	46.47	9.86	.83
	ENG 100	283	47.07	9.55	.57
	COLLEGE	1448	50.69	8.84	.23
Total for Survey	**RDG 090**	170	137.18	29.75	2.28
	RDG 099	256	142.64	28.48	1.78
	ENG 098	142	139.91	28.10	2.36
	ENG 100	283	141.08	28.42	1.69
	COLLEGE	1448	152.09	27.43	.72

Reading and writing subtests of the COMPASS Placement test were available for 1,200 of the students, of which 534 were first-time students and 666 were continuing students. Low but significant positive correlations ($p < .01$) were found among the reading scales and the placement subtests. Correlations for first-time students and continuing students are reported in Table 6. Correlations among first-time and continuing students were quite similar for the *self-concept* and *reading strategies* scale correlations with the COMPASS reading subtest. However, continuing students had higher correlations for the *value* and *self-concept* scales with the COMPASS writing subtest.

TABLE 6

Correlations[a] *of Reading Scale Scores with COMPASS Placement Test Scores*

Reading Scale	COMPASS Subtest Reading	Writing
First-time Students (n = 534)		
Value	.08	.10
Self-concept	.19	.06
Reading Strategies	.17	.16
Continuing Students(n = 666)		
Value	.15	.15
Self-concept	.15	.15
Reading Strategies	.15	.16
Total Sample (n = 1200)		
Value	.12	.11
Self-concept	.16	.09
Reading Strategies	.15	.15

[a]All correlations are significant at the .01 level.

Demographic analyses. Valid gender and ethnic data was available for 1,625 of the students. MANOVA analysis indicated significant gender differences for all three reading scales ($p < .01$) and significant ethnic differences for the *value* ($p < 05$)and *self-concept* ($p < .01$) scales. There was not a significant gender-ethnic interaction effect. Results of the MANOVA analyses are reported in Table 7 and scale means are reported in Table 8.

For all three reading scales, females had significantly higher mean scores ($p < .01$). The mean difference was most striking for the *value* scale where females averaged more than four points higher than males. On the *reading strategies* scale, females averaged two points higher than males.

TABLE 7

MANOVA Results for Gender and Ethnic Differences on Reading Scale Scores

EFFECT: GENDER BY ETHNIC

Multivariate Tests of Significance (S = 3, M = - 1/2, N = 806 1/2)

Test Name	Value	Approximate F	DF	Error DF	Sig. of F
Pillais	.00591	1.06457	9.00	4851.00	.386
Hotellings	.00594	1.06506	9.00	4841.00	.385
Wilks	.99409	1.06488	9.00	3930.64	.385
Roys	.00510				

Univariate F-tests with (3,1617) D. F.

Variable	Hypothesis SS	Error SS	Hypothesis MS	Error MS	F	Sig. of F
CONCEPT	636.76616	162906.401	212.25539	100.74607	2.10684	.097
VALUE	378.00646	234646.934	126.00215	145.11251	.86831	.457
STRATEGY	85.34046	134046.195	28.44682	82.89808	.34315	.794

EFFECT: GENDER

Multivariate Tests of Significance (S = 1, M = 1/2, N = 806 1/2)

Test Name	Value	Approximate F	DF	Error DF	Sig. of F
Pillais	.03099	17.21540	3.00	1615.00	.000
Hotellings	.03198	17.21540	3.00	1615.00	.000
Wilks	.96901	17.21540	3.00	1615.00	.000
Roys	.03099				

Univariate F-tests with (1,1617) D. F.

Variable	Hypothesis SS	Error SS	Hypothesis MS	Error MS	F	Sig. of F
CONCEPT	1036.11248	162906.401	1036.11248	100.74607	10.284	.001
VALUE	6328.91941	234646.934	6328.91941	145.11251	43.614	.000
STRATEGY	692.65696	134046.195	692.65696	82.89808	8.356	.004

EFFECT: ETHNIC

Multivariate Tests of Significance (S = 3, M = 1 1/2, N = 806 1/2)

Test Name	Value	Approximate F	DF	Error DF	Sig. of F
Pillais	.02871	5.20888	9.00	4851.00	.000
Hotellings	.02936	5.26474	9.00	4841.00	.000
Wilks	.97138	5.24180	9.00	3930.64	.000
Roys	.02487				

Univariate F-tests with (3,1617) D. F.

Variable	Hypothesis SS	Error SS	Hypothesis MS	Error MS	F	Sig. of F
CONCEPT	1841.30271	162906.401	613.76757	100.74607	6.092	.000
VALUE	1283.83062	234646.934	427.94354	145.11251	2.949	.032
STRATEGY	258.70147	134046.195	86.23382	82.89808	1.040	.374

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TABLE 8

Ethnic Means and Standard Deviations within Gender Category

Reading Scale Gender Ethnicity	Count	Mean	Standard Deviation	Standard Error of the Mean
Self-concept				
Females				
Asian American	86	47.29	10.53	1.14
African American	21	56.97	5.36	1.17
Hispanic	73	51.13	8.42	.99
White	635	51.22	9.85	.39
Males				
Asian American	84	47.21	10.68	1.17
African American	34	48.90	13.85	2.38
Hispanic	45	49.08	11.41	1.70
White	647	49.38	10.01	.39
Value				
Females				
Asian American	86	54.58	8.01	.86
African American	21	59.42	7.82	1.71
Hispanic	73	53.88	11.43	1.34
White	635	52.79	12.03	.48
Males				
Asian American	84	48.89	11.11	1.21
African American	34	48.01	13.35	2.29
Hispanic	45	47.26	13.19	1.97
White	647	46.77	12.63	.50
Reading strategies				
Females				
Asian American	86	50.17	7.97	.86
African American	21	53.93	5.98	1.30
Hispanic	73	50.83	7.43	.87
White	635	51.06	8.74	.35
Males				
Asian American	84	48.33	9.73	1.06
African American	34	49.60	11.15	1.91
Hispanic	45	49.46	10.64	1.59
White	647	48.76	9.52	.37

Valid ethnic data was available for 1,625 students. Four ethnic groups: Asian, African American, Hispanic, and White, were represented. The MANOVA analysis found significant differences among the four groups.

Univariate F-tests indicated significant differences among ethnic groups on both the *value* ($p < .01$) and *self-concept* scales ($p < .05$). For both scales, African American students had the highest means, largely due to the comparatively high means attained by female African American students. Both male and female Asian American students had the lowest *self-concept* scale means in their respective groups. For the *reading strategies* scale, the mean for African American female students was over three scale points higher than for any other ethnic group. On the other hand, the male ethnic groups had very similar means on the *reading strategies* scale.

Valid birth dates were available for 1,724 students. Slight but positive correlations were found among age and two reading scales, *value* and *reading strategies*. The *value* scale had the highest correlation, .27 ($p < .01$). Age and *reading strategies* exhibited a .16 correlation ($p < .01$). Age and *self-concept* were not correlated.

End of semester analyses. Three types of end of semester analyses were done. The first compared beginning semester scale means for students in English and not in reading courses with end of semester scale means for students in English and reading courses. The second compared pre- and post-survey scale means for students in reading courses. The third examined relationships among pre-survey scale means and course grades.

A total of 920 students in three of the four English courses completing surveys at the beginning of the semester were not taking a reading course concurrently. Another 241 students in the same English courses were taking a reading course concurrently. Before comparing pre-survey scale means for students only taking English courses with the post-survey scale means for students taking both English and reading courses, it is necessary to examine the pre-survey scale means for the two groups.

If there were no significant differences among the two groups on the pre-survey means, interpretation of differences (or no differences) on the proposed pre- post-survey comparison would be very different. To determine if the two groups exhibited different means on the pre-survey, a MANOVA analysis of pre-survey means was done and results are shown in Table 9.

TABLE 9

MANOVA Results for Students Taking English and Students Taking Reading and English on Pre-Survey Scale Scores and Descriptive Statistics (N = 1,161)

EFFECT: ENGLISH-ONLY

Multivariate Tests of Significance (S = 1, M = 1/2, N = 577 1/2)

Test Name	Value	Approximate F	DF	Error DF	Sig. of F
Pillais	.01885	7.41057	3.00	1157.00	.000
Hotellings	.01921	7.41057	3.00	1157.00	.000
Wilks	.98115	7.41057	3.00	1157.00	.000
Roys	.01885				

Univariate F-tests with (1,1159) D. F.

Variable	Hypothesis SS	Error SS	Hypothesis MS	Error MS	F	Sig. of F
CONCEPT1	1406.33198	117108.330	1406.33198	101.04256	13.918	.000
STRATEGY1	1614.55253	97154.605	1614.55253	83.82623	19.261	.000
VALUE1	2798.30816	180920.923	2798.30816	156.10088	17.926	.000

Reading Scale Course(s) taken	Count	Mean	Standard Deviation	Standard Error of the Mean
Self-Concept				
English course only	920	50.76	9.82	.32
English and reading courses	241	48.04	10.89	.70
Value				
English course only	920	50.35	12.45	.41
English and reading courses	241	46.52	12.65	.81
Reading Strategies				
English course only	920	50.26	9.10	.30
English and reading courses	241	47.36	9.38	.60
Total Survey				
English course only	920	150.75	27.57	.91
English and reading courses	241	141.92	28.61	1.84

Clearly, students only taking English had significantly higher pre-survey means ($p < .01$) than students taking both English and reading courses.

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Students taking both English and reading courses averaged about nine points lower on the total score than students taking only English. The largest difference among the two groups was for the *value* scale where students taking both English and reading averaged almost four scale points lower than students taking only English. Students taking the college level literature course that completed surveys were excluded from this analysis because only two students were also taking reading concurrently.

There were 263 post-surveys of students taking both English and reading courses for comparison with pre-survey results of students taking only English courses. As shown in Table 10, MANOVA analysis indicated no significant differences among the pre-survey scale means of students taking only English courses and the post-survey scale means of students taking both English and reading courses. All of the scale means for students taking both English and reading courses were less than one scale point different than the scale means for students taking only English. In fact, the total scale means for the two groups differed by less than one scale point! Clearly, after a semester of reading and English instruction, students reached the point where students not required to take reading started.

Two hundred seventy reading students had both pre- and post-surveys for analysis. Paired *t*-tests were done to test for significant differences among the pre- and post-survey scale means. As shown in Table 11, reading students had significantly higher post-survey means than pre-survey means on all three factor scales ($p < .01$). Post-survey means were almost five scale points higher for the *value* and *self-concept* scales and almost four scale points higher for the *reading strategies* scale.

TABLE 10

MANOVA Results for Students Taking English and Students Taking Reading and English on Survey Scale Scores and Descriptive Statistics (N = 1,183)

EFFECT: ENGLISH-ONLY

Multivariate Tests of Significance (S = 1, M = 1/2, N = 588 1/5)

Test Name	Value	Approximate F	DF Hypothesis DF	Error DF	Sig. of F
Pillais	.00130	.51182	3.00	1179.00	.674
Hotellings	.00130	.51182	3.00	1179.00	.674
Wilks	.99870	.51182	3.00	1179.00	.674
Roys	.00130				

Univariate F-tests with (1,1181) D. F.

Variable	Hypothesis SS	Error SS	Hypothesis MS	Error MS	F	Sig. of F
CONCEPT2	.00354	99687.731	.00354	84.40959	.00004	.995
STRATEGY2	34.28962	94235.928	34.28962	79.79333	.42973	.512
VALUE2	2.06184	104984.462	2.06184	88.89455	.02319	.879

Reading Scale Course(s) taken	Count	Mean	Standard Deviation	Standard Error of the Mean
Self-Concept				
English course only	920	50.76	9.82	.32
English and reading courses	263	50.77	9.80	.58
Value				
English course only	920	50.35	12.45	.41
English and reading courses	263	50.48	12.38	.76
Reading Strategies				
English course only	920	50.26	9.10	.30
English and reading courses	263	49.96	9.41	.58
Total Survey				
English course only	920	150.75	27.57	.91
English and reading courses	263	150.43	28.22	1.74

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TABLE 11

Comparison of Pre- and Post-survey Factor Scale Means among Students Taking Reading Courses (N = 270)

Reading Scale Pre or Post	Mean	Standard Deviation	*t*-value	*p*
Self-Concept				
Pre-survey	45.88	10.49	11.06	< 001
Post-survey	50.74	9.30		
Value				
Pre-survey	45.63	12.46	8.48	< 001
Post-survey	50.54	12.47		
Reading Strategies				
Pre-survey	46.39	9.25	7.68	< 001
Post-survey	50.09	9.18		
Total Survey				
Pre-survey	137.89	27.81	11.11	< 001
Post-survey	151.36	27.43		

Using semester English grade as the dependent variable, separate regression analyses were done with each scale score and the total score as the independent variable. Separate analyses were done because of the intercorrelation among the factor scales. Initially, only students not taking a reading course were used in these analyses. However, when reviewing the results, it was decided to also do a special analysis using end of semester reading scale scores for the students taking both English and reading courses. Course level analyses were done for four English courses: ENG 098, ENG 100, ENG 101, and ENG 102. ENG 098 is the first level developmental English course, ENG 100 is the second level developmental English course, ENG 101 is a college level writing course, and ENG 102 is a college level literature course.

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Student grades in the English courses were converted to a five point numeric scale (A = 5, F = 1) and data for students dropping the course were not included. Results of the regression analyses are summarized in Table 12.

Table 12

Beginning of Semester Scale Scores as Predictors of English Course Grades for Students Taking Only English

	N	B	SE of B	Constant	F	*p*	R^2
ENG098							
Concept	24	-.0414	.025	6.287	2.64	.12	.107
Value	24	-.0080	.014	4.638	.31	.58	.014
Strategies	24	-.0403	.018	6.056	4.81	.04	.179
Total	24	-.0118	.007	5.936	3.05	.13	.104
ENG100							
Concept	101	-.0101	.011	3.864	.79	.38	.008
Value	101	-.0046	.009	3.566	.25	.62	.002
Strategies	101	-.0053	.012	3.614	.20	.66	.002
Total	101	-.0027	.004	3.747	.46	.50	.005
ENG101							
Concept	683	-.0027	.005	3.635	.28	.60	<.001
Value	683	.0121	.004	2.882	9.38	<.01	.014
Strategies	683	.0031	.286	3.109	1.92	.17	.003
Total	683	.0030	.002	3.045	2.70	.10	.002
ENG102							
Concept	419	.0062	.006	3.159	1.00	.32	.002
Value	419	.0210	.005	2.357	15.85	<.01	.037
Strategies	419	.0191	.385	2.493	6.70	.01	.013
Total	419	.0069	.002	2.409	8.61	<.01	.020

The *value* scale regression was significant for both the ENG 101 and ENG 102 courses. The relationship was very weak but positive, which means students with higher scores on the *value* scale tended to have slightly higher course grades. The *reading strategies* scale and total scale regressions were significant for the ENG 102 course also. With the exception of the *reading strategies* scale regression for the ENG 098 course, none of the other regression analyses were significant. It appears that the reading survey has some predictability for college level

English courses but not for developmental English courses. In an effort to better understand the scales, regression analyses were repeated for students taking both reading and English courses using the end of semester survey scale scores. As shown in Table 13, results appear to be the reverse of what was found for students taking only English courses.

Table 13

End of Semester Factor Scale Scores as Predictors of English Course Grades for Students Taking both English and Reading Courses

	N	B	SE of B	Constant	F	*p*	R^2
ENG098							
Concept	133	.0039	.008	3.691	.25	.62	.002
Value	133	.0089	.007	3.429	1.75	.19	.013
Strategies	133	.0085	.008	3.463	1.09	.30	.008
Total	133	.0029	.003	3.443	1.13	.29	.008
ENG100							
Concept	157	.0264	.010	2.317	7.04	<.01	.043
Value	157	.0161	.008	2.847	4.09	.04	.026
Strategies	157	.0209	.010	2.628	4.68	.03	.029
Total	157	.0085	.003	2.375	6.38	<.02	.040
ENG101							
Concept	107	-.0254	.009	4.825	8.25	<.01	.073
Value	107	-.0260	.006	4.785	17.18	<.01	.141
Strategies	107	-.0309	.010	5.058	10.40	<.01	.090
Total	107	-.0110	.003	5.156	14.67	<.01	.123

The reading scale scores were negatively related to the college level English writing course and positively related in the higher level developmental English course, ENG 100. Looking at grade correlations, it appears that the higher the level of English course, the lower the correlation among English and reading course grades. The correlation for ENG 098 was .51; for ENG 100, it was .45; and for ENG 101, it was .22. All correlations were significant ($p < .01$). Based on these results, it may well be that at the beginning of the semester, scores for students in developmental classes are too low to reliably predict performance in English courses. The unusual finding for

the ENG 101 students that were also taking a reading course may be due to other attitudinal factors.

Conclusions

The exploratory and confirmatory factor analyses did result in the development of a 28 item Reading Survey that measures three factors, *value, self-concept,* and *reading strategies.* The scales' reliabilities were good for an attitude inventory, ranging from .85 for the *value* scale to .76 for the *self-concept* scale (using the calibration sample). Not surprisingly, the three scales exhibited moderate intercorrelations (of the unobserved factors) ranging from .51 for the *value* and *self-concept* correlation to .66 for the *value* and *reading strategies* correlation.

The scales appear to behave predictably with respect to students level of reading. Using course placement, which is based on a reading placement test, students with developmental level course placements had lower mean scores on all three scales than students placed in college level courses. Additionally, there was a slight, but significant, positive correlation between Reading Survey scale scores and the COMPASS reading and writing subtest scores. The Reading Survey scale scores did indicate developmental reading and English students were generally lacking in reading self-concept, valued reading less, and were less likely to use reading strategies than students enrolled in college level English courses.

Another interesting finding was the difference among *value* scale scores for first-time students and continuing college students. First-time students tended to value reading less than more experienced college students.

There were gender and ethnic mean differences on the reading scales. Female students tended to have significantly higher scores than their male counterparts. Other studies have previously noted gender differences of the type found so the result is not a surprise. Gender

differences were especially apparent on the *value* scale where the mean for females was much higher than the mean for males.

There were also ethnic differences but they were not straight forward. Although African American females had higher means on all three scales, the interaction effect was not significant. It may be that the disparate group *n*'s contributed to the mixed results. Others, such as Baker and Wigfield, have found similar ethnic differences when studying children's motivation for reading.

There was evidence, particularly for the *value* scale for college level English not taking a reading course concurrently, students that obtain the higher grades valued reading more as measured by the scale. The *reading strategies* scale also had a positive correlation with grades in a college level literature course. For developmental students not taking a reading course concurrently, there generally was not a significant relationship. This result may have been due to their generally lower scores on the scales. Results from examining the end of semester scale scores (for students taking both English and reading courses) in conjunction with English course grades lend some support to this possibility.

By the end of the fall semester, students in reading courses had attained scores no different than scores of English students that had not been required to take a reading course. Particularly, the increase on the *value* scale should help these students in college level courses in light of the previous findings for college level courses.

Implications

This survey can be used to inform whole class instruction. When subscores on the value of reading factor are low for a class, curriculum should be called into question. Readings must be authentic and relevant to students in order for them to value the reading process and, in turn, be

motivated by it. Student choice of materials and student-generated inquiry can also be incorporated as methods of addressing low task value.

When a class generates low subscores on self-concept, instructors might provide more successful reading experiences. Ways that this might be addressed are by offering texts at current reading levels or by allowing for more individualized selection of readings.

Closely related to reader self-concept is the awareness of reading strategies. Low subscores in this area may indicate the need for more explicit instruction of strategic reading behaviors, which include knowing what to do when reading, as well as knowing when, why, and how to do it. Reading strategies that can be modeled and practiced may include: predicting, asking questions while reading, setting goals, forming opinions, connecting ideas across texts and personal experiences, and rereading or reading ahead when encountering difficulties. As students learn and incorporate strategic behaviors, they will develop better control of the reading process, which, in turn, will affect motivation.

While this survey impacts whole class instruction, it can also inform individualized instruction. When individual students have low scores in one or more areas, specific subscores might pinpoint a need for further interventions in specific areas, such as word-level strategies like breaking words into distinguishable parts for word identification and then using context to determine word meaning.

Results of this survey can also drive staff development, in which a key issue is "How do teachers change their belief systems and then acquire the knowledge to make appropriate changes?" If instructors truly believe that it is crucial to motivate students to read, then the survey will allow them to examine their own classrooms, their individual students, and their reading programs as a whole. Finally, it can also foster instructor self-reflection and growth by

making explicit three critical factors of motivation: reader self-concept, valuing of the reading process, and strategic reading.

Future Directions

Our next step is to examine the relationship between motivational aspects of reading and performance in reading. We would like to compare student results on the motivation survey taken after a reading course with success in future college level coursework. One possibility is to look at students' semester GPA's after reading coursework is completed.

Further research on the scales is needed. The moderate correlations among the scales indicate the possibility of a second order factor that should be investigated. How the scales relate to student success in college level coursework needs to be investigated to further validate the scales.

Finally, while this survey extends the important role that motivation plays in reading into the arena of adult learning, it would be enhanced by the development of interview questions that provide insight into individual adult readers. Adding this qualitative approach would offer more information for individual teacher intervention, as well as provide additional knowledge to the field of reading in the area of adult motivation.

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